

# The Social Anxiety Disorder Spectrum

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**Background:** Current diagnostic classifications emphasize the categorical nature of disorders such as social anxiety disorder. Nevertheless, phenomenological and psychobiological data have led to the hypothesis that social anxiety symptoms and disorders lie on various dimensions. **Method:** A MEDLINE search (1966–2003) for relevant articles on the social anxiety disorder spectrum was undertaken using the terms *shyness*, *behavioral inhibition*, *social phobia*, *social anxiety disorder*, *avoidant personality*, *dimension*, and *spectrum* to aim at objective coverage, but references for this article were chosen more subjectively to illustrate data and themes in description, pathogenesis, pharmacotherapy, and psychotherapy of the social anxiety disorder spectrum. **Results:** Several different approaches to delineating a social anxiety disorder spectrum of conditions have been described. These include (1) a spectrum of social fear and avoidance, (2) a spectrum of body-focused concerns, (3) a spectrum of anxiety disorders and affective dysfunction, and (4) a spectrum of social deficits. **Conclusions:** Social anxiety symptoms and disorders do appear to lie on a number of different dimensions. Nevertheless, additional research is necessary to determine the clinical utility of assessing these different dimensions and to investigate their underlying psychobiology.

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Social phobia, increasingly termed *social anxiety disorder*, was introduced into the *Diagnostic and Statistical Manual of Mental Disorders* in the third edition.<sup>1</sup> In DSM-III, social anxiety disorder was classified as an anxiety disorder, while avoidant personality disorder was categorized as a personality disorder. This apparently artificial division has received a good deal of criticism. Indeed, there has been growing attention to spectrums of anxiety symptoms and disorders; a dimensional approach may have heuristic value in both clinical and research settings. In this article, we review the spectrum of social anxiety symptoms and disorders.

A MEDLINE search (1966–2003) for relevant articles on the spectrum of social anxiety was undertaken using the terms *shyness*, *behavioral inhibition*, *social phobia*, *social anxiety disorder*, *avoidant personality*, *dimension*, and *spectrum* to aim at objective coverage. However, references for this article were chosen more subjectively in order to illustrate data and themes in description, pathogenesis, pharmacotherapy, and psychotherapy of the social anxiety disorder spectrum.

Previous reviews of the social anxiety disorder spectrum<sup>2–4</sup> have taken somewhat different approaches to conceptualizing this construct. At present, there are arguably insufficient data to validate any single model of the social anxiety disorder spectrum. In the following pages, we describe a range of dimensions on which social anxiety symptoms and disorders may lie.<sup>5</sup> These are (1) a spectrum of social fear and avoidance, (2) a spectrum of body-focused concerns, (3) a spectrum of anxiety disorders and affective dysfunction, and (4) a spectrum of social deficits.

## SPECTRUM OF SOCIAL FEAR AND AVOIDANCE

A range of symptoms of social fear and avoidance has been described; these vary from subsyndromal social anxiety and shyness, through nongeneralized and generalized social anxiety disorder, and on to avoidant personality disorder. The former end of the spectrum may be characterized by a higher prevalence and more transitory

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symptoms, with less avoidance and functional impairment, while the latter end may be characterized by a lower prevalence and more enduring symptoms, with higher avoidance and functional impairment.<sup>2</sup>

A first question is the appropriate boundaries of social anxiety disorder. Social anxiety is a universal emotion that is likely to have adaptive value.<sup>6,7</sup> Nevertheless, the number of social situations feared and the severity of the fears appear to be continuously distributed in community samples.<sup>8,9</sup> To determine the boundary between normality and psychopathology, DSM-IV places an emphasis on the clinical criterion; on determining whether a particular set of symptoms is associated with clinical distress and/or impairment. A range of research has therefore focused on the extent of impairment seen along the spectrum of social fear and avoidance.

Altering the threshold of the clinical criterion, for example, led to changes in social anxiety disorder prevalence, ranging from 1.9% for “a great deal of interference,” to 7.1% for “a great deal of interference or distress,” to 18.7% for “moderate interference or distress.”<sup>10</sup> The disability associated with subthreshold social anxiety should not, however, be underestimated. In the Epidemiological Catchment Area (ECA) survey, in comparison to nonanxious controls, respondents with subthreshold social anxiety were more impaired regarding level of education and income, and they reported more chronic medical problems, mental health visits, and use of psychotropic drugs.<sup>11</sup> Similar findings were also apparent in a cohort of subjects in the Zurich Cohort Study of Young Adults.<sup>9</sup>

Another contested boundary is that between shyness and social anxiety disorder. Although shyness has been defined in different ways by different investigators, it would seem to be associated with less impairment than social anxiety disorder.<sup>12</sup> Nevertheless, although shyness may not be synonymous with social anxiety disorder, structured interviews of people with shyness demonstrate a high prevalence of social anxiety disorder.<sup>13</sup> Such data support the idea that subthreshold social anxiety, shyness, and social anxiety disorder lie on a spectrum of conditions characterized by social fears and avoidance.

Within social anxiety disorder itself, there again appears to be a spectrum of social fears and avoidance. There is some support for a categorical differentiation between nongeneralized social anxiety disorder and generalized social anxiety disorder (fear of “most social situations”), in that generalized social anxiety disorder is associated with earlier onset, increased comorbidity, longer persistence, and greater impairment.<sup>14</sup> Subtyping of social anxiety disorder is supported by latent variable analysis of community<sup>15</sup> and clinical data.<sup>16</sup> Nevertheless, the different subtypes of social anxiety disorder can also be conceptualized as lying on a continuous spectrum, with those respondents admitting to a greater number of feared situations also showing increased disability.<sup>8</sup>

The criteria for avoidant personality disorder (APD) have increasingly overlapped with those of social anxiety disorder; 6 of the 7 criteria involve social interaction. It not surprising, therefore, that in clinical samples, there is significant overlap between social anxiety disorder, especially generalized social anxiety disorder, and APD.<sup>3</sup> Drawing a clear dividing line between these entities is particularly difficult given that, as in the case of personality disorders, the onset of social anxiety disorder typically occurs in adolescence and that its course tends to be enduring rather than episodic.<sup>17</sup> However, compared with patients with social anxiety disorder alone, those with both social anxiety disorder and APD have more severe anxiety and greater comorbidity and are more functionally impaired.<sup>18,19</sup> Indeed, APD appears to cover a greater breadth of socially avoidant behavior than social anxiety disorder.<sup>20</sup>

A second question is whether there are psychobiological mechanisms that underlie the spectrum of social fear and avoidance. In a seminal series of studies, Kagan and colleagues<sup>21,22</sup> showed that behavioral inhibition can be reliably measured early in life, persists through adolescence, and is heritable. Although behavioral inhibition is not necessarily accompanied by psychopathology, children with behavioral inhibition are at risk for subsequent development of social anxiety disorder.<sup>23,24</sup> Childhood shyness may be a related construct and may also predict later anxiety disorders.<sup>25</sup>

There is growing information about the psychobiological underpinnings of behavioral inhibition and shyness. Recent findings suggest that an endophenotype characterized by excessive amygdala activation in response to unfamiliar faces may be present.<sup>26</sup> Introversiveness, on the other hand, has been correlated with lower dopamine activity.<sup>27</sup> There are also suggestions that particular genetic variants may characterize behavioral inhibition<sup>28</sup> and childhood shyness.<sup>29</sup>

There is also some evidence of an overlap in psychobiology of behavioral inhibition, shyness, and social anxiety disorder. For example, shyness and social anxiety disorder both result in increased autonomic arousal in social situations. Amygdala hypersensitivity may characterize both behavioral inhibition and social anxiety disorder, and decreased dopaminergic function may be found in both introversion and social anxiety disorder.<sup>30</sup> The question of whether behavioral inhibition or shyness responds to medication has not been adequately resolved, but anecdotal reports on the use of selective serotonin reuptake inhibitors (SSRIs) in clinical practice<sup>31</sup> and controlled studies of SSRIs in healthy controls<sup>32</sup> suggest that this issue deserves further study. The question of whether early behavioral interventions for behaviorally inhibited children may be useful in preventing subsequent psychopathology is one that deserves further investigation.<sup>33</sup>

Generalized and nongeneralized social anxiety disorder do seem to be characterized by differences in family his-

tory.<sup>34</sup> The psychobiology of social anxiety disorder is only gradually being characterized; although there is some evidence that different mechanisms underpin generalized versus nongeneralized social anxiety disorder,<sup>14</sup> there are insufficient data to determine the precise neurocircuitry and neuroreceptors responsible for interindividual variations on the spectrum of social fears and avoidance. Furthermore, there is surprisingly little evidence that generalized and nongeneralized social anxiety disorder are characterized by differences in treatment response.<sup>35</sup>

Patients with both social anxiety disorder and APD have an increased incidence of first-degree relatives with social anxiety disorder,<sup>34</sup> although a high incidence of APD has also been shown in individuals with panic disorder.<sup>20</sup> Furthermore, in patients with coexisting social anxiety disorder and APD, both cognitive-behavioral therapy and pharmacotherapy have resulted in reduced symptoms of social anxiety, such that subjects no longer meet diagnostic criteria for APD.<sup>36-38</sup> These data further question the value of making too sharp a distinction between these 2 conditions in clinical practice.

Another condition in which social avoidance is key is selective mutism. The vast majority of children with selective mutism meet criteria for social anxiety disorder,<sup>39,40</sup> and high rates of social anxiety disorder are found in their first-degree relatives.<sup>39</sup> Furthermore, small open trials indicate that phenelzine or SSRIs may be effective in the treatment of this condition.<sup>40,41</sup> Therefore, some authors have argued that selective mutism can be conceptualized as lying on the severe end of a spectrum of social anxiety in children.<sup>42</sup> Nevertheless, this position requires further investigation; selective mutism may, for example, be characterized by unique deficits in language.<sup>43</sup>

### **SPECTRUM OF BODY-FOCUSED CONCERNS**

In social anxiety disorder, symptoms often involve a focus on the body. An early term in the literature was "erythrophobia"; fear of blushing is common in social anxiety disorder. Other body-focused symptoms in social anxiety disorder include concerns about tremor, sweating, and eye contact. Further, the panic attacks of social anxiety disorder differ from those of panic disorder insofar as they are characterized by blushing, tremor, and sweating.<sup>44</sup>

Unfortunately, the most commonly used measure in social anxiety disorder pharmacotherapy trials, the Liebowitz Social Anxiety Scale (LSAS), does not measure changes in body-focused symptoms. Nevertheless, the Social Phobia Inventory includes a somatic subscale, and Davidson and colleagues<sup>45</sup> have found that somatic symptoms decrease in response to effective treatment. Hyperhidrosis, for example, in patients with social anxiety disorder shows a general, albeit variable, response to treatment in social anxiety disorder clinical trials.<sup>45</sup>

Several disorders other than social anxiety disorder involve a concern about the body in social contexts. One such condition occurs when general medical conditions with disfigurement or other physical symptoms result in social anxiety. DSM-IV diagnostic criteria specifically exclude the diagnosis of social anxiety disorder when social anxiety is generated by the presence of symptoms caused by a medical condition (e.g., stuttering, tremor secondary to a movement disorder). Nevertheless, this form of social anxiety appears to be not uncommon and can be accompanied by clinical distress or dysfunction. Furthermore, in a clinical case series of individuals suffering from severe social anxiety symptoms secondary to disfiguring or disabling medical conditions, all had good response to monoamine oxidase inhibitors (MAOIs).<sup>46</sup>

In body dysmorphic disorder (BDD), there is a concern with imagined ugliness. Given the obsessional nature of these concerns, and consequent compulsive behaviors, it has been suggested that BDD lies on an obsessive-compulsive spectrum of disorders.<sup>47</sup> Certainly, like obsessive-compulsive disorder (OCD), BDD responds selectively to serotonin reuptake inhibitors (SRIs) in comparison to noradrenergic reuptake inhibitors (NRIs).<sup>48</sup> Nevertheless, social avoidance in patients with BDD is often a key issue—body concerns may be heightened in particular social situations, and consequent social avoidance may be particularly disabling—so there is also an argument for conceptualizing the disorder as lying on a social anxiety disorder spectrum.

It has been suggested that BDD is the fourth most common comorbid disorder in social anxiety disorder.<sup>49</sup> Conversely, rates of social anxiety disorder have been higher than rates of OCD in subjects with BDD,<sup>50</sup> although not all subsequent work has been consistent.<sup>51</sup> In addition, APD is the most common personality disorder in BDD.<sup>47</sup> Both BDD and OCD respond more robustly to SRIs than to NRIs,<sup>48</sup> but this may also be true of social anxiety disorder. Interestingly, there are case reports describing the response of BDD to phenelzine—this medication is useful in social anxiety disorder and of questionable value in OCD.<sup>52</sup>

Olfactory reference syndrome (ORS) is a condition characterized by a persistent preoccupation with imagined body odor (including halitosis).<sup>53</sup> Symptoms often include marked shame and avoidance of social situations, although these are thought secondary to the olfactory concerns. Although long described in the literature, it is not clear where ORS should be diagnosed in the DSM-IV system; BDD criteria emphasize a preoccupation with a defect in appearance, and OCD patients typically have concerns about contamination rather than about odor per se.

The fact that ORS does not quite fit into any particular DSM-IV disorder arguably emphasizes the relative failure of this categorical system to recognize the various dimensions of social anxiety. It might be useful to include diag-

nostic criteria for ORS in an expanded category of social anxiety and/or somatic concerns.<sup>53</sup> Interestingly, case reports support the idea that treatments useful in OCD and social anxiety disorder are also useful in ORS.<sup>54</sup>

*Taijin kyofusho* (TKS) is a disorder that is primarily described in the East and that is classified as a culture-bound condition in DSM-IV. The term *taijin kyofusho* means “fear of interpersonal relations”; the condition has also been termed *anthropophobia* and has been a key construct in the development of Morita therapy in Japan.<sup>55</sup> Patients have concerns about social situations; in particular, they worry about offending others because of their gaze, body odor, physical appearance, or behavior.<sup>56</sup> Some cases overlap with APD,<sup>57</sup> but there is also a more severe form with limited insight. TKS symptoms appear present in 6% or more of the Japanese population.<sup>58</sup>

It has been suggested that social anxiety disorder and TKS lie on a spectrum of social anxiety disorders; fear of embarrassing oneself may be a particularly common concern in the West, while fear of offending others is more common in the East.<sup>59</sup> Nevertheless, there is a degree of overlap; some Western patients describe fears of offending others, and many patients in the East also have fears of embarrassing themselves. The neurobiology of TKS has not yet been thoroughly investigated.<sup>60</sup> Nevertheless, some patients with TKS symptoms treated in Western settings improved on MAOI therapy,<sup>61</sup> and there is evidence that TKS in the East can respond to clomipramine and fluvoxamine.<sup>62,63</sup>

Eating disorders also involve both body concerns and concerns about social interaction. It is generally thought that in these conditions the body-focused concerns are primary, and indeed if the fear in social/performance situation is primarily related to preoccupation with body shape and weight, DSM-IV specifically prohibits the diagnosis of social anxiety disorder. Nevertheless, patients with anorexia nervosa and bulimia nervosa often have comorbid social anxiety disorder, with the onset of social anxiety disorder reported first in more than 75% of subjects in one study.<sup>64</sup> Similarly, women with bulimia may have a range of concerns with how people perceive them.<sup>65</sup>

Delusional disorder of the somatic type may be viewed as lying on the extreme end of the spectrum of social fears in relation to body image. In such cases, there are fixed false beliefs about having a physical defect. Nevertheless, the boundary between this condition and BDD with poor insight is unclear. Furthermore, BDD patients with poor insight respond equally well to treatment with SSRIs<sup>47</sup> and so do not necessarily require antipsychotic medications. Some patients with ORS and TKS are similarly characterized by poor insight. Perhaps further investigation is warranted to determine whether there is also a category of Western social anxiety disorder with poor insight.

## SPECTRUM OF ANXIETY DISORDERS AND AFFECTIVE DYSFUNCTION

Hudson and Pope<sup>66</sup> have put forward the idea of a broad spectrum of affective disorders, noting phenomenological and psychobiological overlaps across a number of mood and anxiety disorders, one of which is social anxiety disorder. This position is arguably supported by a range of data on comorbidity; in the ECA survey, 69% of individuals with social anxiety disorder had lifetime comorbidity; in 76.8% of subjects social anxiety disorder occurred first and in 7.2% social anxiety disorder occurred in the same year as another psychiatric disorder.<sup>67</sup> Similarly, in the National Comorbidity Survey (NCS), lifetime rates of psychiatric comorbidity were 81% in respondents with social anxiety disorder, again with the trend for social anxiety disorder to occur first (except in the case of simple phobias).<sup>68</sup> In clinical samples, there is also significant overlap between social anxiety disorder and depression.<sup>69</sup>

There are, of course, important differences in the phenomenology of the different anxiety disorders.<sup>44</sup> Nevertheless, it is notable that depressive symptoms in patients with social anxiety disorder are commonly atypical (i.e., increased eating, increased sleeping).<sup>70,71</sup> This is of particular interest insofar as both social anxiety disorder and atypical depression are characterized by rejection sensitivity. Furthermore, both social anxiety disorder and atypical depression respond more robustly to MAOIs than to TCAs.<sup>72,73</sup> Thus, although it is certainly useful to differentiate between different anxiety and mood disorders for some purposes, the construct of an affective spectrum of disorders may on occasion be helpful in guiding treatment.

An important question for the future is whether early treatment of social anxiety disorder with pharmacotherapy can prevent later depression. An interesting epidemiologic study suggests that this is certainly the case for generalized anxiety disorder.<sup>74</sup> As our understanding of the endophenotypes that characterize social anxiety disorder improves, this question will become increasingly pertinent.

A manic episode may be viewed as lying at the extreme end of a spectrum of social inhibition versus disinhibition. Increased lifetime rates of bipolar disorder in social anxiety disorder were found in both the ECA and NCS,<sup>67,68</sup> and a 9% lifetime history of bipolar disorder type II was noted in a group of outpatients with social anxiety disorder.<sup>75</sup> High rates of hypomania were found in social anxiety disorder subjects responding to either reversible inhibitors of monoamine oxidase A or MAOIs.<sup>76</sup> The role of anticonvulsants in treating bipolar disorder, as well as social anxiety disorder, deserves further investigation.

## SPECTRUM OF SOCIAL DEFICITS

Social skills may be defective in at least a subgroup of social anxiety disorder patients, and such deficits may

overlap with those seen in some shy individuals.<sup>13</sup> Indeed, it has been suggested that there are 2 types of shy individuals: shy introverts who prefer to be alone and lack social skills, and shy extraverts who want social interactions but experience cognitive distortions about social situations.<sup>77</sup>

A range of other disorders is also characterized by social deficits. Williams disorder is a condition in which there may be increased sociability. Hypersociability in these patients may be dysfunctional insofar as they are unable to appropriately ascertain the risk of different social interactions. The existence of such a deficit is important insofar as it can be expected that if social anxiety disorder is characterized by a hypersensitive “false alarm” in response to social cues,<sup>6,7</sup> there might well be a condition in which there were a hyposensitive alarm.

In schizoid and schizotypal personality disorders, pervasive developmental disorders, and schizophrenia, there are also important deficits in social interaction, which may fall into the category of hyposociability; social interaction is not experienced as rewarding, and there is a failure to engage appropriately in social situations. In these disorders, it would seem that social deficits comprise only one aspect of a range of dysfunctions; nevertheless, a better understanding of the relevant psychopathology may well be of interest for understanding more subtle disturbances of social anxiety.

Certain neurobiological factors may underpin components of both social anxiety disorder and these conditions. Positron emission tomography, for example, has suggested that lower striatal D<sub>2</sub> binding correlates with scores on the detachment scale of the Karolinska Scales of Personality and is also seen in social anxiety disorder.<sup>78</sup> A number of studies have shown an increased prevalence of social anxiety disorder in first-degree relatives of patients with autistic disorder, and specific genetic deficits can be responsible for syndromes characterized by autism and social anxiety.<sup>79</sup> Social anxiety disorder may be a premorbid risk factor for schizophrenia.

As with other putative spectrums of social anxiety, further validation is required to determine the precise boundaries and underlying psychobiology of the range of symptoms from Williams syndrome to conditions characterized by deficits in social interaction. Brain imaging and genetic data may be key in delineating relevant endophenotypes. It is interesting, for example, that in social anxiety disorder there appears to be increased activation in amygdala and orbitofrontal cortex during emotional learning, while psychopathy is characterized by a hypoactive frontolimbic circuit in the same paradigm.<sup>80</sup>

## CONCLUSION

Social anxiety disorder has in the past been underdiagnosed and undertreated. It remains to be determined

whether recent increases in attention to this condition and the registration of medications for its treatment (moclobemide, paroxetine, sertraline, venlafaxine) will improve its recognition and management. One of the issues that clinicians face is determining the boundaries of normal social anxiety and pathologic social anxiety disorder. Another issue is understanding the heterogeneity of social anxiety disorder; there are important clinical distinctions, for example, between those with nongeneralized and generalized social anxiety disorder.<sup>14</sup>

Awareness of the dimensions on which social anxiety symptoms and disorders lie may contribute to increased recognition of a range of additional conditions and also to better understanding of the phenomenology and psychobiology of different spectrums and subtypes of social anxiety disorder. Recent work has made available a number of different instruments for assessing the spectrum of social anxiety disorder and subtypes of different social anxiety disorder symptoms.<sup>4</sup> Given the prevalence of social anxiety symptoms, patients with anxiety and mood disorders should be systematically interviewed for social anxiety disorder, body image disorders, and deficits in social interaction.

Additional work is required to validate different social anxiety disorder dimensions. To date, there have been few factor analyses of the LSAS, and these are arguably limited by the fact that the scale does not assess the full range of symptoms seen in different social anxiety disorder patients. There is a relative paucity of work on a number of social anxiety disorder spectrum conditions; this is perhaps fostered by their lack of recognition in DSM (e.g., olfactory reference syndrome is overlooked in DSM-IV-TR). Additional work is also needed to compare and contrast the range of social anxiety symptoms seen in different parts of the globe; the recent introduction of SSRIs to Japan provides a particularly useful opportunity to undertake comparative research on the social anxiety disorder spectrum.

As the psychobiology of social anxiety disorder advances, it will hopefully be possible to specify the underlying mechanisms that generate these spectra of psychopathology. In the interim, putative dimensions of social anxiety may be heuristically useful in the clinical setting insofar as they suggest specific treatment options, with many of the symptoms and conditions that fall on these spectrums appearing to respond to SSRIs and to cognitive-behavioral therapy.

*Drug names:* clomipramine (Anafranil and others), paroxetine (Paxil and others), phenelzine (Nardil), sertraline (Zoloft), venlafaxine (Effexor).

*Disclosure of off-label usage:* The authors have determined that, to the best of their knowledge, clomipramine and fluvoxamine are not approved by the U.S. Food and Drug Administration for the treatment of taijin kyofusho (TKS); clomipramine and phenelzine are not approved for the treatment of body dysmorphic disorder (BDD); and

phenelzine is not approved for the treatment of social anxiety disorder or olfactory reference syndrome (ORS).

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